APPENDIX 9 CURRENT STATUS OF VIRGINIA'S TMDL PROGRAM

In 1997, the Virginia General Assembly enacted the Water Quality Monitoring, Information, and Restoration Act (WQMIRA), §62.1-44.19:4 through 19:8 of the Code of Virginia. This statute directs DEQ to develop a list of impaired waters, a Total Maximum Daily Load (TMDL) or TMDL alternative for each impairment, and implementation plans for these TMDLs.

During its 2013 Legislative Session, the General Assembly passed Chapters 756 (HB2048) and 793 (SB1279) of the 2013 Virginia Acts of Assembly which designated, effective July 1, 2013, the Virginia Department of Environmental Quality as the lead agency for nonpoint source programs in the Commonwealth of Virginia. Effective July 1, 2013 DEQ has the lead for the entire TMDL program, including implementation, for the Commonwealth of Virginia. The Department of Mines, Minerals, and Energy (DMME) has signed Memoranda of Understanding (MOU) with DEQ agreeing to a cooperative effort in the TMDL and Implementation Plan (IP) processes. DMME assists with the development and implementation of TMDLs involving pollutants from mineral extraction activities. The Virginia Department of Health also participates in a cooperative effort by assisting in the development of TMDLs and TMDL IPs for impaired shellfish waters.

Fulfillment of 1999 Consent Decree and Post-CD TMDL Development

In 1998, the American Canoe Association and the American Littoral Society filed a complaint against EPA for failure to comply with the provisions of §303(d) of the Clean Water Act in Virginia. As a result of this legal action, EPA signed a Consent Decree (CD) with the plaintiffs in 1999 that contained Virginia's TMDL development schedule through year 2010. Also under the CD, EPA agreed to develop TMDLs on these impaired waters to meet the schedule if Virginia failed to do so.

To meet the Consent Decree, Virginia completed TMDLs covering approximately 225 shellfish and 333 non-shellfish CD impairments, and approximately 185 non-CD impairments. In addition, Virginia completed TMDLs for 28 CD waters and 18 non-CD waters covered under the EPA-lead Chesapeake Bay TMDL. Virginia has also received credit under the CD for an additional 145 delisted or recategorized impairments.

Virginia continues to development TMDLs and estimates that over 1000 impaired waters will require TMDL development in the coming years. Virginia has developed several strategies to sustain this rigorous TMDL Development pace with level funding. These include a) developing TMDLs using a watershed approach to address multiple impairments in watersheds with similar characteristics, b) developing TMDLs in-house, c) identifying non-TMDL solutions, such as straight to implementation, to address impairments, and d) developing TMDLs that are more easily implemented. Virginia continues to explore tools and options for restoring and protecting water quality, both for environmental benefit and efficient program management.

TMDL Implementation

Once the TMDL is developed and approved Virginia state law under WQMIRA requires the development of a TMDL IP. The IP describes the measures that must be taken to reduce pollution levels in the stream, and includes a schedule of actions, costs, and monitoring. While there is not a mandated schedule for IP development, local or state agencies, as well as community watershed groups, can take the lead in developing IPs. The following table presents the state's TMDL implementation projects funded with federal 319(h) and/or state funds VNRCF and/or WQIF (current to June 2013).

Summary of Virginia TMDL Implementation, January 2001-June 2013

Watershed Area	TMDL Segment	Status	Implementation	Funds Used
A. Eight projects received 5-7 years of continuous funding from 319(h) administered by DCR. These projects are no longer receiving TMDL funds, but may continue to receive funding from other sources.				
Middle Fork Holston River	VAS-O05R	Moderate improvement, Success Story 2005, 2013	2001-2008	§319(h)
Upper Blackwater	VAW-L08R	Some improvement	2001-2007	§319(h)
North River	VAN-B21R, B22R, B27R, B29R	Improvement, Muddy Creek delisted for nitrate-N 2010	2001-2008	§319(h)
Holmans Creek	VAV-B45R	Some improvement	2005-2008	§319(h)
Catoctin Creek	VAN-A-02R	Some improvement	2005-2009	§319(h)
Cooks Creek and Blacks Run	VAV-B25R, B26R	Some improvement	2006-2012	§319 RFP,NFWF
Mill and Dodd Creeks	VAW-N20R, N21R	None reported	2007-2011	§319 & VNRCF
Little and Beaver Creeks	VAS-O07	None reported	2007-2012	§319, VNRCF, RFP
B. Sixteen projects funded by Federal 319(h) as well as State WQIF and VNRCF administered by DCR between July 2012 and June 2013				
Big Otter River	VAW-L23R, L25R, L27R, L28R	Improvement, segment delisted 2008	2006-2012	§319, VNRCF, RFP
Lower Blackwater	VAW-L09R, L10R and L11R	Some improvement,	2006-2012	§319(h), VNRCF
Willis River	VAC-H36R	Improvement, delisted (3), Success Story 2010	2005-2013	§319(h), VNRCF
Thumb, Great, Carter and Deep Runs	VAN-E01R, E02R & E10R	Some improvement, Carter Run Success Story 2013, possible delisting	2006-2013	§319(h), VNRCF
Hawksbill and Mill Creeks	VAN-B38R, B39R	None reported	2008-2012	§319(h),VNRCF
Looney Creek	VAW-I26R	None reported	2009-2013	§319, VNRCF
Hazel River	VAN-E03R, E04R, E05R	None reported	2009-2013	§319, VNRCF, WQIF RFP
Slate River and Rock Island Creek	VAC-H1/R, H21R, H22R	Too Early	2010-2014	§319, VNRCF
Craig Run, Browns Run and Marsh Run	VAN-E08R	Too Early	2011-2014,	§319(h),VNRCF, VNCR-CBLEI
Moores Creek	VAV-H28R	Some improvement	2012-2014 (sporadically since 2005)	§319, VNRCF, WQIF RFP

Watershed Area	TMDL Segment	Status	Implementation	Funds Used
Smith Creek	VAV-1347R	Too Early	2012-2014, 2008+ NRCS	§319(h), NRCS
Guest River	VAS-P11R	None reported	2012-2014 (sporadically since 2005)	§319, VNRCF, WQIF RFP
Lewis Creek	VAS-P04R	Too Early	2012-2014	§319(h),VNRCF
Upper York River	VAN-F06R, F07R	Too Early	2012-2014	§319(h),VNRCF
Hays, Moffats, Otts, and Walker Creeks	VAN-I34R	Too Early	2012-2014	§319(h),VNRCF
Knox and Pawpaw Creek	VAS-Q03R	Too Early	2012-2014	§319(h),VNRCF
C. Two projects receiving minimal, one time funding through DCR (RFPs etc)				
Stroubles Creek	VAW-N22R	Some Improvement	2006+	WQIF RFP
Little Dark Run and Robinson River	VAN-E15R	Too early	2011	WQIF RFP, CBLEI-TMDL (WQIF)
D. Fourteen projects receiving WQIF/VNRCF funds for agricultural BMPs (and RFP for septic work)				
Nottoway	VASC-K14R	N/A	2005-2009	WQIF, VNRCF
Falling River	VAW-L34R	Some improvement	2007 - 2013	WQIF, VNRCF
Mossy and Naked Creeks, Long Glade Run	VAV-B19R, B24R, B28R	Some improvement	2007 - 2013	WQIF, VNRCF
Pigg River (Blue Ridge SWCD)	VAW-L14R, L15R, L16R, L17R	Improvement	2007 - 2013	WQIF, VNRCF, RFP
Pigg River (Pittsylvania SWCD)	VAW-L13R, L17R, L18R	Some improvement	2007 - 2013	WQIF, VNRCF, RFP
Twittys and Ash Camp Creeks	VAC-L39R	Inadequate data	2007 - 2013	WQIF, VNRCF
Abrams and Opequon Creeks	VAV-B08R, B09R	N/A	2006 - 2011	WQIF, VNRCF
Cub, Turnip and Buffalo Creeks	VAC-L36R, L37R, L40R	No data	2007 - 2012	WQIF, VNRCF
Flat, Nibbs, Deep and West Creeks	VAP-J08R, L09R, J11R	Improvement, Flat Creek identified for Success Story	2007 - 2013	WQIF, VNRCF
Moffett Creek, Middle River, Polecat Draft	VAV-B10, B13, B15	Some improvement	2007 - 2013	WQIF, VNRCF
Christians Creek and South River	VAV-B14, B30	Improvement	2007 - 2013	WQIF, VNRCF
Upper Clinch River	VAS-P01R	Inadequate data	2007 - 2012	WQIF, VNRCF
Bluestone River	VAS-N36R	Some improvement	2007 - 2012	WQIF, VNRCF

Watershed Area	TMDL Segment	Status	Implementation	Funds Used
Briery, Little Sandy, Spring, Saylers Creeks and Bush River	VAC-J02, J03, J04, J05 AND J06R	Some improvement	2007 - 2013	WQIF, VNRCF

Source: The Chesapeake Bay and Virginia Waters Clean-Up Plan-Progress Report, November 2013

TMDL Progress

As reported in the November 2013 Watershed Cleanup Plan Report, progress in TMDL clean-up plan development and implementation has been made in the following areas:

- **Bluestone**: West Virginia plans to join Virginia in the development of an interstate PCB TMDL for the Bluestone River. The Virginia portion of the watershed has impairments for PCBs in fish and the water column. High PCB concentrations in the water column found during Virginia and West Virginia's collaborative TMDL data acquisition phase triggered an EPA study and a cleanup effort. A former Super Fund site, Lin Electric facility, was remediated for extremely high levels of PCBs in sediment/sludge. The EPA Super Fund program has been conducting additional PCB monitoring in both states (see USEPA Final Analytical Report dated May 11, 2012). The report results indicate Beaver Pond Creek tributary has the highest remaining contamination level. One former cleanup site within the drainage area to Beaver Pond Creek tributary, near Washington Street, Bluefield, WV, has been disturbed, and follow up monitoring and evaluation by EPA is in progress.
- **Elizabeth/tidal James River**: PCB source investigation work is on-going in these water bodies. As part of TMDL development, PCB point source monitoring was requested from those VPDES permits identified as possible contributors to fish impairments. Efforts are continuing to more accurately account for regulated storm water inputs. Also, the fish tissue dataset was updated during summer 2012 and additional ambient water samples were collected spring 2013. The additional datasets will enhance development of the TMDL, which is scheduled to be completed in 2015-2016.
- **Roanoke (Staunton)**: This TMDL was completed in early 2010. The Roanoke TMDL monitoring identified two significant PCB sources. TMDL implementation has continued and includes monitoring requirements for an extensive list of VPDES permits. Pollutant Minimization Plans have been submitted to DEQ from the known active point sources and will be required for newly identified facilities that discharge unsafe levels of PCBs.
- **Levisa Fork**: This TMDL was completed in April 2010. TMDL monitoring has not revealed a viable source(s) of the contaminant. This particular TMDL was submitted to EPA as a phased TMDL. The Virginia Department of Mines, Minerals and Energy is overseeing the completion of the phased TMDL, however only total suspended solid (TSS) monitoring was performed and the PCB sources are still not identified.
- **New River:** The upper New River and Claytor Lake have been added to the project which previously consisted of the lower New River below Claytor Lake dam. PCB source identification has been on-going since 2010. Several iterations of ambient river water PCB monitoring have been performed while monitoring requirements for VPDES permits is on-going. Fish tissue samples were collected during summer/fall 2012 to provide a current dataset that will assist with TMDL development. Remediation of a PCB contaminated site located on Peak Creek, which is a major tributary to the impairment, is nearly complete. Of note, TMDL guidelines were followed by EPA and DEQ for PCB clean-up. The TMDL is targeted for completion in 2015-2016.

- **North Fork Holston River**: This TMDL was completed in 2011. A fish consumption advisory for mercury extends approximately 81 miles from Saltville, Virginia to the Tennessee state line. While most of the river mercury originated from the Olin plant site, this contaminant has been distributed throughout the floodplain downstream. The TMDL identified that most of the current mercury loadings come from the watershed and floodplain with lesser amounts from the former plant site. In order to meet the TMDL loadings, mercury reductions will be needed from all contributors.
- **South and Shenandoah Rivers**: This TMDL was completed in 2010. The South River has a fish consumption advisory that extends about 150 miles from Waynesboro to the WV state line via the South River, the South Fork Shenandoah River, and the mainstem Shenandoah River. The primary source of mercury deposited in the river and floodplain was from releases that occurred during the 21 years that DuPont used mercury at the facility (1929-1950) in Waynesboro. Atmospheric deposition was not identified as a significant mercury source. Fish tissue from a reference site upstream of the former DuPont plant site show safe mercury levels while fish tissue below the plant contain elevated amounts of mercury. Unfortunately, mercury levels in fish tissue from this portion of the river have not shown a decline since the mercury was discovered in the river in 1976. Remediation and restoration efforts continue through DEQ's TMDL and federal Resource Conservation and Recovery Act and Natural Resource Damage Assessment regulatory programs, and a significant nonregulatory science-based initiative through the South River Science Team has been in place since 2000.
- **No Discharge Zone Designation**: DEQ has completed four NDZ applications for Virginia's Northern Neck (the peninsula of land separating the tidal Potomac and Rappahannock Rivers). The bodies of water affected by these applications are contained in 22 bacteria TMDLs, covering over 90 individual shellfish impairments. DEQ has recently validated impairments reported in the applications with shellfish impairments reported by the Department of Shellfish Sanitation as of December 31, 2012. Three other NDZ initiatives are in progress. The Go-Green Committee of Gloucester County is working with Virginia Institute of Marine Sciences to develop NDZ applications for Sarah and Perrin Creeks in Gloucester County. The Elizabeth River Project, an independent non-profit organization, has committed to creating a task force to achieve increased pump-out compliance by addressing education and accessibility issues. An NDZ application for Owl Creek and Rudee Inlet in Virginia Beach is currently in abeyance at EPA. Completion of the construction of a year-round pump-out station accessible to all boats is scheduled for completion in February 2014 after which, EPA will be asked to review the NDZ application for affirmative determination.
- **Dumps Creek** was first listed as impaired for aquatic life in 2002. A TMDL was developed in 2003 that identified total dissolved solids as the most probable stressor in the watershed. The General Standard TMDL for Dumps Creek, Russell County, Virginia was approved by EPA in June 2004 and by the State Water Control Board in August 2004. A TMDL Implementation Plan was developed for the watershed in 2008 that identified best management practices needed for Dumps Creek to meet the water quality standard.

  In 2008, DMME entered into a Settlement Agreement with a NPDES permittee due to failure to comply with the waste load allocations for total dissolved solids as set by the total maximum daily load allocations for the Dumps Creek watershed. Since that time, the permittee has been working to meet all the actions described in the Settlement Agreement. As part of the Agreement, the permittee was required to collect benthic macroinvertebrate samples at the DEQ monitoring station located in the watershed. A quality assurance project plan was developed and approved by DEQ for Level III non- agency data in 2010.

  In addition to the Settlement Agreement, other Dumps Creek watershed improvement activities have been conducted by the state and coal industry in a cooperative effort to restore the watershed. Previously coal mined areas have been successfully reclaimed and underground mine water pumping to the watershed has been significantly reduced. Benthic data collection began in spring 2013 and continued into 2014. DEQ has also been collecting benthic data in the watershed. These recent data collections indicate benthic health in the Dumps Creek watershed

is improving and is currently meeting the state's biological standards. Three samples from the non-agency data and two samples from the DEQ data indicate Dumps Creek is on track for delisting in the 2016 Integrated Report.

TMDL Success Stories

The impact of nonpoint sources of pollution on water quality is a major focus of TMDLs. DCR implements agricultural programs, while DEQ and DCR partner to coordinate implementation of best management practices (BMPs) designed to curb all types of nonpoint sources. DEQ tracks the progress of these efforts through monitoring and assessment. Promising results have been observed throughout the state:

- Elevated fecal coliform levels in Virginia Beach's Lynnhaven Bay, Broad Bay and Linkhorn Bay violated Virginia's bacteria water quality standard in shellfish-supporting waters and prompted the Virginia Department of Health (VDH) to condemn these waters for shellfish harvest in 1998. As a result, DEQ listed these three waterbodies on Virginia's 1998 303(d) List of Impaired Waters for fecal coliform. Virginia Beach and its partners implemented numerous best management practices that reduced fecal coliform bacteria and allowed the impaired waters to achieve the standards for shellfish waters.

- Agricultural and residential activities in the Middle Fork Holston River watershed in southwestern Virginia have caused the river to become impaired by sediment and fecal coliform bacteria. Urban and agricultural activities—including targeting failing septic systems and excluding livestock from streams—have helped reduce fecal coliform values to creeks draining into the river, resulting in a 50 percent reduction of bacteria water quality violations in one of those creeks.

- Runoff from agricultural and residential activities and livestock stream access have contributed to water quality impairments to Virginia's Muddy Creek and Lower Dry River of the Shenandoah River Valley. Both waterbodies violate the state water quality standard for bacteria, and excess sediment and phosphorus loads have further degraded aquatic life in Muddy Creek. These water quality problems placed Muddy Creek and the Lower Dry River on Virginia's 303(d) List of Impaired Waters. Over four years, project partners installed a number of agricultural and residential best management practices (BMPs) that helped mitigate many of the causes of water quality degradation. Bacteria counts have significantly declined in both streams since 2001. The Lower Dry River is close to meeting bacteria standards. Improvement in the integrity of benthic communities has also been observed in associated creeks.

- Batie Creek was listed on Virginia's 303(d) List of Impaired Waters in 1998. The creek was listed because of low dissolved oxygen levels, caused by inflows of anoxic leachate due to a lumber company's improper disposal of sawdust. The low dissolved oxygen levels negatively affected a population of endangered cave isopods (a type of crustacean) in Batie Creek's headwaters. With help from an array of partners, led by the Karst Program of the Virginia Department of Conservation and Recreation's Division of Natural Heritage, the company removed and reused most of the decomposing sawdust. Dissolved oxygen levels have rebounded, prompting the removal of Batie Creek from the Impaired Waters List in 2006.

- Numerous implementation actions have occurred to address the Willis River impairment, including: (1) 18 miles of livestock exclusion stream fencing installed, resulting in removal of 2,577 livestock from having direct stream access, (2) one loafing lot management system for a dairy was installed, (3) ten septic tanks have been pumped out, an additional three are contracted, (4) one septic system has been repaired and three repairs are contracted, (5) one

septic system has been replaced and two more are contracted, and (6) an alternative waste treatment system is contracted. As a result of these actions, the bacteria standard violation rate has been reduced to 10% or less for portions of the Willis River, resulting in a partial delist from the Impaired Waters List.